

Rec'd PCT/PTO 24 FEB 2006

10/537642

RAW SEQUENCE LISTING

**The Biotechnology Systems Branch of the Scientific and Technical
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Application Serial Number: 10/537642

Source: PCT

Date Processed by STIC: 2/24/06

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Pq

RAW SEQUENCE LISTING

DATE: 02/24/2006

PATENT APPLICATION: US/10/537,642

TIME: 12:52:01

Input Set : F:\EPI-103X PCT.ST25.txt

Output Set: N:\CRF4\02242006\J537642.raw

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3 <110> APPLICANT: Epimmune, Inc.
4   The United States of America as Represented by the
5   Secretary of the Navy
6   Sette, Alessandro
7   Doolan, Denise L.
8   Carucci, Daniel J.
9   Sidney, John
10  Southwood, Scott
12 <120> TITLE OF INVENTION: PLASMODIUM FALCIPARUM ANTIGENS AND METHODS OF USE
14 <130> FILE REFERENCE: EPI-103X
-> 16 <140> CURRENT APPLICATION NUMBER: US/10/537,642
-> 17 <141> CURRENT FILING DATE: 2005-06-06
19 <150> PRIOR APPLICATION NUMBER: US 60/431,494
20 <151> PRIOR FILING DATE: 2002-12-06
22 <160> NUMBER OF SEQ ID NOS: 1161
24 <170> SOFTWARE: PatentIn version 3.2
26 <210> SEQ ID NO: 1
27 <211> LENGTH: 1904
28 <212> TYPE: PRT
29 <213> ORGANISM: Plasmodium falciparum
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37 Val Leu Thr Leu Ile Asn Asp Glu Gln Asp Leu Tyr Ile Tyr Lys Asp
38          20          25          30
41 Ile Tyr Asn Asn Cys Glu Asn Asp Ile Tyr Ser Leu Tyr Leu Asn Ile
42          35          40          45
45 Ile Asn Gln Tyr Lys Asn Cys Leu Asp Gly Glu Lys Lys Leu Phe Leu
46          50          55          60
49 Asn Lys Cys Ile Lys Asn Gly Asn Val Lys Tyr Ile Glu Lys Val Val
50 65          70          75          80
53 Lys Gln Ile Ile Glu Lys Lys Asn Val Tyr Asn Asp Ile Asp Asp Lys
54          85          90          95
57 Ser Ile Lys Lys Ser Ile Asp Leu Leu Ile Tyr Pro Cys Val Tyr Glu
58          100         105         110
61 Ile Asn Lys Asn Glu Phe Tyr Tyr Thr Thr Ser Cys Cys Ser Gly Arg
62          115         120         125
65 Ile Val Ile Phe Lys Glu Val His Ile Asn Asn Lys Asn Asp Asn Gln
66          130         135         140
69 Lys Lys Ile Phe Lys Asn Ser Thr Thr Ser Gln Glu Lys Lys Glu Glu
70 145         150         155         160
73 Asn Ile Ser His His Leu Ser Asn Ile Asn Leu Leu Asn Val His Glu
74          165         170         175

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77 Lys Asp Glu Leu Phe Leu Ser His Phe Lys Lys Asn Phe Ile Leu Gln
78          180          185          190
81 Asn Asn Glu Glu Lys Tyr Thr Tyr Cys Ser Asp His Asp Ile Ser Ser
82          195          200          205
85 Phe Phe Asp Val Ser Lys Lys Lys Thr Asn Lys Trp Glu Asp Ile Tyr
86          210          215          220
89 Glu Glu Lys Asn Leu Lys Glu Asn Ile Leu Tyr Ile Asn Lys Glu His
90 225          230          235          240
93 Lys Lys Lys Lys Val Arg Lys Lys Lys Lys Ile His Lys Lys Asn Val
94          245          250          255
97 His Ile Leu Tyr Ser Ser His Ser His Gln His Leu Lys Tyr Asp Ile
98          260          265          270
101 Lys Val Ile Lys Asp Ile Leu Lys Lys Glu Leu Phe Gln Asn Tyr Phe
102          275          280          285
105 Asp Val Asn Gln Arg Asn Asp Tyr Lys Asn Ile Ser Phe Asp Phe Met
106          290          295          300
109 Gly Thr Lys Lys Tyr Ser Leu Gln Asn Glu Val Asn Leu Asn Ser Ser
110 305          310          315          320
113 Ile Ile Thr Met Ser Asp Lys Glu Gly Met Lys Lys Lys Glu Lys Asn
114          325          330          335
117 Asn Lys Val Ile Asn Ile Leu Asn Asn Gln Asn Lys Arg Asn Ile Phe
118          340          345          350
121 Ile Lys Phe Glu Pro Phe Ile Ile His Val Lys Cys Thr Thr Phe Leu
122          355          360          365
125 Ser Ala Leu Lys Leu Leu Lys Ile Ala Gln Tyr Ala Gly Leu Lys Gln
126          370          375          380
129 Ser Gly Ile Leu Asn Phe Asn Lys His Val Thr Val Ala Ile Arg Gly
130 385          390          395          400
133 Ser Met Arg Leu Glu His Leu Leu Gly Asp Ile His Pro Thr Leu Gln
134          405          410          415
137 Gln Thr Asn Leu Met Glu Ile Ile His Ile Cys Asn Asn Lys Leu Ser
138          420          425          430
141 Lys Asn Leu Ser Gln Leu Val His Phe Tyr Lys Cys Phe Lys Gln Phe
142          435          440          445
145 Lys Glu His Glu His Thr Tyr Gln Phe Val Ser Ile Asn Arg Glu Met
146          450          455          460
149 Leu Ser Ser Leu Glu Asn Asn Leu Ser Ser Asn Thr Lys Gln Lys Lys
150 465          470          475          480
153 Lys Ser Asn Lys Lys Asn Thr Leu His Val Lys Asp Asn Leu Gln Asp
154          485          490          495
157 Asn Lys Lys Ile Ala His His Met Lys Lys Lys Lys Lys Glu Ile Asn
158          500          505          510
161 His Leu Tyr Leu Thr Cys Ser Gly Lys Lys Asn Ile Pro Asn Gly Asn
162          515          520          525
165 Arg Ser Ile Ala Glu Gln Asp Lys Thr Glu Cys Lys Leu Lys Asp Glu
166          530          535          540
169 Ile Ile Tyr Glu Asn Thr Glu Asn His Ile Asn Ile Ile Lys Lys Glu
170 545          550          555          560
173 Lys Asn Ile Ile Asp Leu Asn Lys Tyr Asn Ile Gln Leu Asn Glu Glu

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| | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 174 | | | | 565 | | | | 570 | | | | 575 | | | | |
| 177 | Gly | Tyr | Ile | Ile | Asn | Glu | Asn | Lys | Asn | Asp | Lys | Phe | Ile | Gly | Trp | Lys |
| 178 | | | | 580 | | | | 585 | | | | 590 | | | | |
| 181 | Ile | Leu | Gly | Asn | Asn | Asn | Met | Asn | Val | Gln | Asn | Phe | Phe | Val | Trp | Gly |
| 182 | | | 595 | | | | | 600 | | | | 605 | | | | |
| 185 | His | Asp | Met | Phe | Met | Gln | Glu | Asn | Lys | Ile | Tyr | Met | Phe | Gly | Gly | Phe |
| 186 | | 610 | | | | | 615 | | | | 620 | | | | | |
| 189 | Ser | Lys | Gly | Val | Arg | Asn | Asn | Lys | Leu | Lys | Ile | Tyr | Asp | Ile | Ile | Asn |
| 190 | 625 | | | | | 630 | | | | | 635 | | | | 640 | |
| 193 | Lys | Lys | His | Phe | Ile | Tyr | Asp | Thr | Glu | Leu | Pro | Ser | Leu | Val | Phe | His |
| 194 | | | | 645 | | | | | | 650 | | | | | 655 | |
| 197 | Asn | Phe | Val | Gln | Leu | Asp | Asp | Lys | Phe | Ala | Phe | Ile | Phe | Gly | Gly | Arg |
| 198 | | | | 660 | | | | | 665 | | | | | 670 | | |
| 201 | Gln | Asn | Pro | Lys | Asn | Cys | Thr | Asn | Met | Val | Trp | Val | Tyr | Asn | Ile | Lys |
| 202 | | | 675 | | | | | 680 | | | | | 685 | | | |
| 205 | Glu | Asn | Phe | Trp | Ile | Lys | Ala | Arg | Arg | Thr | Ser | Thr | Leu | Val | Arg | Lys |
| 206 | | 690 | | | | | 695 | | | | 700 | | | | | |
| 209 | Asn | Lys | Asn | Val | Leu | Phe | Leu | Glu | Lys | Met | Glu | Lys | Asn | Met | Glu | Val |
| 210 | 705 | | | | | 710 | | | | | 715 | | | | 720 | |
| 213 | Lys | Met | Asp | Arg | Met | Lys | Tyr | His | Met | Gly | Lys | Lys | Tyr | Asn | Asn | Asp |
| 214 | | | | 725 | | | | | | 730 | | | | 735 | | |
| 217 | Asp | Asn | Asn | Ser | Asp | Asn | Asn | Asn | Asp | Asn | Asn | Asn | Asp | Asn | Asn | Asn |
| 218 | | | | 740 | | | | | 745 | | | | 750 | | | |
| 221 | Asn | Asn | Phe | Leu | Cys | Asn | Asp | Glu | Asn | Ile | Phe | Tyr | Phe | Asn | Asn | Glu |
| 222 | | | 755 | | | | | 760 | | | | 765 | | | | |
| 225 | Glu | Glu | Pro | Cys | Pro | Arg | Tyr | Arg | His | Ala | Ser | Val | Phe | Val | Arg | Arg |
| 226 | | 770 | | | | | 775 | | | | 780 | | | | | |
| 229 | Tyr | Ile | Lys | Lys | Ser | Lys | Ser | Ile | Tyr | Ile | Phe | Tyr | Thr | Tyr | Gly | Gly |
| 230 | 785 | | | | 790 | | | | | | 795 | | | | 800 | |
| 233 | Val | Asn | Glu | Lys | Asn | Glu | Ile | Leu | Asn | Asp | Ile | Trp | Glu | Gly | Lys | Ile |
| 234 | | | | 805 | | | | | | 810 | | | | 815 | | |
| 237 | Ile | Leu | Asn | Leu | Glu | Asp | Lys | Gly | Ile | Ala | His | Ile | Glu | Trp | Asn | Lys |
| 238 | | | | 820 | | | | | 825 | | | | 830 | | | |
| 241 | Lys | Asn | Cys | Ser | Gln | Lys | Thr | Glu | Ala | Cys | Arg | Ile | Asn | Asn | His | Ser |
| 242 | | | 835 | | | | | 840 | | | | 845 | | | | |
| 245 | Met | Ile | Tyr | Asn | Lys | Lys | Lys | Asn | Phe | Ile | Tyr | Ile | Val | Gly | Gly | Tyr |
| 246 | | 850 | | | | | 855 | | | | 860 | | | | | |
| 249 | Gln | Asp | Asn | Asp | Lys | Asp | Asn | Tyr | Thr | Gln | Tyr | Asn | Glu | Tyr | Asn | Asn |
| 250 | 865 | | | | 870 | | | | | | 875 | | | | 880 | |
| 253 | Asn | Asn | Asn | Asn | Asn | Asn | Lys | Asp | Asn | Ser | Val | Asn | Ser | Asp | Asp | Met |
| 254 | | | | 885 | | | | | | 890 | | | | 895 | | |
| 257 | Ile | Gly | Met | Pro | Asn | Leu | Ser | Ser | Thr | Val | Val | Cys | Lys | Lys | Met | Glu |
| 258 | | | | 900 | | | | | 905 | | | | 910 | | | |
| 261 | Tyr | Leu | Tyr | Thr | Tyr | Asp | Ile | Lys | Lys | Asp | Asn | Phe | Phe | Tyr | Thr | Lys |
| 262 | | | 915 | | | | | 920 | | | | 925 | | | | |
| 265 | Cys | Leu | Gly | Asp | Asp | Asn | Met | Glu | Leu | Lys | Ala | Tyr | Pro | Ser | Asp | Arg |
| 266 | | 930 | | | | | 935 | | | | 940 | | | | | |
| 269 | Phe | Ser | His | Ser | Thr | Cys | Leu | Ile | Asn | His | Asn | Phe | Phe | Met | Leu | Val |
| 270 | 945 | | | | 950 | | | | | | 955 | | | | 960 | |

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Output Set: N:\CRF4\02242006\J537642.raw

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273 Gly Gly Ile Asn Ile His Arg Thr Leu Asn Asp Val Trp Leu Phe His
274           965           970           975
277 Ile Lys Thr Asn Lys Trp Asn Tyr Leu Gly Thr Phe Thr Phe Gln Asn
278           980           985           990
281 Met Tyr Val Arg Ser Lys Val Val Ser Glu Asn Asn Cys Val Tyr Ile
282           995           1000           1005
285 Ile Gly Gly Gly Cys Thr Val Phe Thr Phe Gly Ser Phe Phe Asp
286           1010           1015           1020
289 Val Pro Ile Trp Ser Asn Phe Ser Gly Ile Met Lys Ser Ile Gln
290           1025           1030           1035
293 His Lys Glu Leu Lys Asn Val Leu Ile Phe Ser Glu Asp Arg Glu
294           1040           1045           1050
297 Val Lys Glu Gly Gln Ala Thr Tyr Asn Asn Glu Ile Lys Lys Asn
298           1055           1060           1065
301 Cys Gly Asn Asn Asn Asp Asn Asn Asn Asn Asn Asn Asn Asn
302           1070           1075           1080
305 Asn Asn Asn Asn Lys Cys Ser Asn Asn Tyr Asn Ile Leu Val Asp
306           1085           1090           1095
309 Lys Val Ala Arg Asn Glu His Leu Glu Lys Tyr Asn Leu Cys His
310           1100           1105           1110
313 Asn Met Leu Ile Glu His Lys Asp Val Ile Lys Lys Glu Ile Leu
314           1115           1120           1125
317 Val Phe Glu Lys Lys Lys Lys Lys Lys Lys Lys Lys Asp Glu Lys
318           1130           1135           1140
321 Gly Asp Asp Ile Met Asp Val Glu Lys Lys Asn Glu Leu Pro His
322           1145           1150           1155
325 Ile Ile Asp Glu Glu Lys Lys Gly Thr Asp Arg Asp Val Glu Lys
326           1160           1165           1170
329 Ser Ser Phe Cys Leu Asp Glu Lys Ser Ile Lys Ile Gly Leu Tyr
330           1175           1180           1185
333 Ile Ile Ile Lys Asn Lys His Phe Val Lys Gln Ile Lys Val Tyr
334           1190           1195           1200
337 Leu Glu Asn Lys Lys Met Phe Asp Asn Ser Leu Lys Ile Tyr Asn
338           1205           1210           1215
341 Pro Lys Gly Asn Gln Lys Asn Glu Glu Asn Glu Lys Asn Glu Glu
342           1220           1225           1230
345 Asn Glu Lys Asn Glu Glu Asn Glu Lys Asn Glu Glu Asn Glu Lys
346           1235           1240           1245
349 Asn Glu Glu Asn Glu Lys Asn Glu Asp Tyr Asn Lys Ile Met Gly
350           1250           1255           1260
353 Glu Glu Lys Lys Phe Tyr Val Pro Ile Lys Lys Lys Leu Asp Asp
354           1265           1270           1275
357 Asp Ile Leu Lys Asn Asp Glu Tyr Phe Lys Thr Val Leu Leu Asp
358           1280           1285           1290
361 Lys Ile Glu Arg Cys Asn Asp Gly Asn Ile Leu Tyr Tyr Glu Lys
362           1295           1300           1305
365 Val Ile Cys Glu Ile Tyr Asn Gly Lys Tyr Gln Asp Asn Ile Lys
366           1310           1315           1320
369 Ser Gln Asn Ser Asn Thr Phe Leu Lys Lys Lys Leu Arg Ile Leu

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| | | | |
|-----|---|------|------|
| 370 | 1325 | 1330 | 1335 |
| 373 | Phe His Lys Phe Leu Asn Lys Lys Val Lys Asn Tyr Leu Asn Ser | | |
| 374 | 1340 | 1345 | 1350 |
| 377 | Ser Glu Lys Lys Met Val Leu Gln Gly Tyr Arg Lys Tyr Glu Ile | | |
| 378 | 1355 | 1360 | 1365 |
| 381 | Ile Gly Asn Ile Leu Ile Phe His Tyr Lys Tyr Phe Glu Cys Ile | | |
| 382 | 1370 | 1375 | 1380 |
| 385 | Met Lys Leu Tyr Lys Val Tyr Glu Gly Lys Leu Lys Lys Tyr Lys | | |
| 386 | 1385 | 1390 | 1395 |
| 389 | Lys Glu Ile Asn Glu Met Ile Glu Arg Arg Arg Leu Tyr Arg Asp | | |
| 390 | 1400 | 1405 | 1410 |
| 393 | Tyr Ser Tyr Ile Ile Lys Asn Lys Lys Lys His Asn Lys Leu Val | | |
| 394 | 1415 | 1420 | 1425 |
| 397 | Ser Cys Phe Leu Met Asn Asp Ile Tyr Glu Tyr Lys Tyr Tyr Val | | |
| 398 | 1430 | 1435 | 1440 |
| 401 | Lys Glu Val Lys Lys Phe Trp Leu Ala Ile Lys Asp Ile Phe Asn | | |
| 402 | 1445 | 1450 | 1455 |
| 405 | Asn Lys Asp Ile Phe Asn Asn Lys Glu Ile Ile Leu Asn Thr Asn | | |
| 406 | 1460 | 1465 | 1470 |
| 409 | Ile Leu Ser Leu Lys Lys Lys Lys Lys Glu Lys Lys Lys Lys Lys | | |
| 410 | 1475 | 1480 | 1485 |
| 413 | Lys Asn Asn Asn Asn Asn Lys Phe Tyr Val Lys Val Lys Phe Asn | | |
| 414 | 1490 | 1495 | 1500 |
| 417 | Lys Lys Gly Ile Thr Asn Lys Ile Asn Ile Leu Leu Tyr Arg Arg | | |
| 418 | 1505 | 1510 | 1515 |
| 421 | Arg Lys Asn Leu Phe Asp Glu Asn Phe Cys Arg Asn Ile Met Lys | | |
| 422 | 1520 | 1525 | 1530 |
| 425 | Arg Asn Lys Asn Cys Glu Ile Ile Lys Lys Lys Arg Lys Ile Lys | | |
| 426 | 1535 | 1540 | 1545 |
| 429 | Cys Val Ala Leu Tyr Glu Lys Val His Gly Lys Leu Arg Gln Asn | | |
| 430 | 1550 | 1555 | 1560 |
| 433 | Lys Ile His Ile Val Cys Gly Lys Asn Leu Lys Thr Val His Ile | | |
| 434 | 1565 | 1570 | 1575 |
| 437 | Glu Asn Lys Ile Lys Tyr Lys Leu Asp Leu Thr Lys Cys Met Phe | | |
| 438 | 1580 | 1585 | 1590 |
| 441 | Ser Ser Gly Asn Gly Thr Glu Lys Glu Arg Met Lys Asn Met Tyr | | |
| 442 | 1595 | 1600 | 1605 |
| 445 | Ile Val Ser Asn Asn Asp Asp Asn Ile Asn Asn Lys Asp Lys Asn | | |
| 446 | 1610 | 1615 | 1620 |
| 449 | Lys Asn Asn Asn Asn Asn Asn Asn Asn Asn Asp Asn Asn Asn Leu | | |
| 450 | 1625 | 1630 | 1635 |
| 453 | Leu Asp Glu Lys Arg Asp Arg Val Lys Glu Asn Val Val Asp Leu | | |
| 454 | 1640 | 1645 | 1650 |
| 457 | Phe Cys Gly Val Gly Tyr Phe Thr Leu Pro Leu Leu Lys Cys Ile | | |
| 458 | 1655 | 1660 | 1665 |
| 461 | Glu Ala Gln Asn Lys Ile Asn Asn Tyr Phe Ala Cys Asp Ile Asn | | |
| 462 | 1670 | 1675 | 1680 |
| 465 | Pro Asp Ser Leu Lys Leu Leu Arg Glu Ser Ile Lys Leu Asn Asn | | |
| 466 | 1685 | 1690 | 1695 |

RAW SEQUENCE LISTING ERROR SUMMARY
PATENT APPLICATION: US/10/537,642

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Please Note:

One or more of n and/or Xaa have been detected in the Sequence Listing. Please review the Sequence Listing to ensure that a corresponding explanation is presented in the <220> <223> fields of each sequence which presents at least one n or Xaa.

Seq#:5; Xaa Pos. 85,123,353 ✓

Seq#:56; Xaa Pos. 7

Seq#:968; Xaa Pos. 1

VERIFICATION SUMMARY

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Output Set: N:\CRF4\02242006\J537642.raw

16 M:270 C: Current Application Number differs, Replaced Current Application Number
17 M:271 C: Current Filing Date differs, Replaced Current Filing Date
1369 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:5 after pos.:80
341 Repeated in SeqNo=5
3464 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:56 after pos.:0
10410 M:257 W: Feature value mis-spelled or invalid, <221> Name/Key for SEQ ID#:112
24960 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:968 after pos.:0